Family *Pholadidae*

*Pholadidea penita* Conrad
*Pholadidea ovoidea* Gould
*Pholadidea rostrata* Val.
*Zirfaea gabbi* Tyron

Family *Teredinidae*

*Bankia setacea* Tyron

Family *Cardiidae*

*Cardium corbis* Martyn

Family *Lyonsiidae*

*Lyonsia saxicola* Baird
*Mytilimeria nuttallii* Conrad

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## THE GENUS MEGAUSTENIA

BY T. D. A. COCKERELL

In 1857 Theobald described a genus of large *Helicarion*-like molluscs as *Cryptosoma,* no doubt in allusion to the fact that, while the creature is rather slug-like, the animal can be entirely withdrawn into the shell. The type was the *Vitrina praestans* of Gould, 1843. In NAUTILUS, 1912, p.

70, I renamed the genus *Megaustenia*, the name proposed by Theobald being preoccupied. In the course of time since 1857 a number of species have been added, and the genus has been found to extend from Burma to Southern China. At the present time *Megaustenia* contains the following:

*M. austeni* (Collinge)
*M. birmanicum* (Philippi)
*M. cochinchinensis* (Morlet)
*M. fragilis* (Moellendorff)
*M. imperator* (Gould)
var. *imperatrix* (West.)
*M. inusitatus* (Godwin-Austen)
*M. messageri* (Bav. & Dautz.)
*M. praecellens* (Von Martens)
*M. praestans* (Gould)
var. *khyoungensis* (G.-A.)
*M. roudonyi* (H. Fischer)
*M. siamensis* (Haines)
(Syn. *paviei* Morlet)

In the vicinity of Nan, in Northern Siam, I could find very few molluscs in the jungle. *Amphidromus xiengensis* Morelet may occasionally be found, and I was surprised to find *Pupisoma orcula* Benson on leaves of coconuts associated with scale insects, on which it apparently feeds.[1] I heard, however, that not far from Nan was a limestone mountain called Pahtoop, and thither I hastened, fully expecting to get snails. Pahtoop is one of a series of limestone hills, more or less like inverted tea-cups in form, which rise out of the lowlands in an abrupt manner, at intervals all the way from Northern Siam to Kuala Lumpur in the Malay Peninsula. My expectations were verified, Pahtoop swarms with snails of many species, and later I was able to collect snails on the southernmost of these hills, at Kuala Lumpur. Almost immediately on reaching Pahtoop I began to find shells which I recognized as those of *Megaustenia*. Mr. Tomlin finds that they are identical with specimens in the British Museum identified as *Cryptosoma siamense*. There is no reason to doubt this reference, but it must be said that they do not quite agree with the photographic figure given by Paul Ehrmann in Sitz. Nat.

[1] Mr. J. R. LeB. Tomlin, who very kindly identified this and other Siamese shells for me, wrote that within a week of the receipt of my *P. orcula*, he received another species of the genus, *P. japonicum*, from Formosa, also associated with Coccidae.

Ges. Leipzig, 1922, fig. 1 of plate. Our shells are distinctly more depressed, with a broader aperture. A characteristic specimen has max. diam. 28 mm. and diam. of aperture 17 mm. Apparently this is not significant as Ehrmann records a shell from his lot with diam. 29.7 mm. and diam. of aperture 18.8 mm. The color is pale brown, somewhat dull, not very translucent, the interior brilliantly shining. There are weak and irregular but evident spiral lines. I found two color varieties, corresponding in character to varieties of *Cochlicopa lubrica*. One (var. *albescens*, n. var.) has the shell milky white; the other (var. *virescens*, n. var.) has it pale greenish. Later, on Pahmeeung Mountain, I obtained *M. siamensis* alive. It not only retires within the shell, but is found firmly glued to pieces of wood, so as to be well preserved from desiccation. When crawling, the animal is about 50 mm. long, the mantle partly overlapping shell; eye-tentacles about 14 mm. long; body dusky ochreous, the caudal region mottled with grey; sole pale ochreous; mantle dusky; margin of foot ochreous, with suffused grey cross-lines; surface of body densely and coarsely warty; body posteriorly sharply keeled; end of body truncate in lateral view, with a more or less distinct angular or horn-like projection above. Compared with the figure of *M. praestans* in Fauna of British India, *M. siamensis* differs in that the mantle seems to overlap the shell less in front, while the flap on the right side is considerably larger, extending beyond the apex of the shell. In other respects there is little difference in the appearance of the animal. *M. praestans* is a smaller, more compact shell than *M. siamensis*. *Macrochlamys hainesi*, a large zonitoid found alive with *Megaustenia* on Pahmeeung, has a different sort of animal, when crawling about 46 mm. long, rather light bluish-grey, not keeled posteriorly; surface rugose; sole and margin of foot pale grey. But the interesting thing is that the incipient caudal horn of *Megaustenia siamensis* is in *Macrochlamys hainesi* Pfr. produced into a long somewhat curved pointed

structure, like the horn of a sphingid caterpillar, but retractile.

While writing on Oriental Zonitoids, I take the opportunity to mention that the entirely white variety of *Ariophanta laevipes* (Müller) is var. *alba* Ckll., named in Science Gossip, April, 1885, p. 77, fig. 55 (from Calcutta).

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## THE SNAILS OF ZION NATIONAL PARK[1]

BY A. M. WOODBURY

Fifteen species of snails have to date been collected in Zion National Park, Utah. One of them, the *Oreohelix*, is large enough to readily attract attention and common enough to be seen on most all of the trails of the Park. The balance are smaller, not readily seen and must be hunted for in order to be found. Of the fifteen species, two are fresh water snails with well developed shells. The other thirteen are terrestrial snails, of which, one is a slug.

Of the fresh water species, *Gyraulus* is found in clear water ponds not frequented by floods, while *Petrophysa* lives on the walls of the canyon where the water trickles down over the face of the cliffs from springs or seeps. This species appears to be limited in distribution to the main Zion Canyon and was named *Physa (Petrophysa) zionis* by Pilsbry in 1925 on account of this limited distribution. Molluscan life appears to be absent from the river in the canyon on account of the frequent corrasive floods.

The land snails inhabit principally the moist sheltered wooded spots where dead or decaying vegetation, such as logs and leaves is abundant. Some forms, such as *Gonyodiscus* and *Agriolimax*, appear to be more prevalent where moisture is constantly present and not subject to periodic drought. Other forms, such as *Pupilla*, *Vitrina*, and *Vitrea*,

[1] Contribution from the Zoological Laboratory of the University of Utah.